

## ABSTRACT

An electrochemical etching system (10) has an etching bath (12) for holding an n-type silicon substrate (20) with one surface (32) of the substrate being in contact with hydrofluoric acid (14), an electrode (28) positioned in hydrofluoric acid, a power source (30) having a positive polarity connected to the silicon substrate and a negative polarity connected to the electrode, and an illumination unit (52) having a light source (56) for an illumination of the other surface (38) of the silicon substrate. The illumination unit illuminates the other surface of the silicon substrate with an illumination of  $10\text{mW/cm}^2$  or more. Also, a ratio of a maximum illumination to a minimum illumination to the other surface of the silicon substrate is set 1.69:1 or less. With the etching system, pores and/or trenches of a certain size and shape can be formed in an entire area of the silicon substrate with a diameter of more than three inches.